Patent claims

1. A method for producing gas diffusion electrodes, suitable for use in electrolysis cells, comprising: producing a sheet-like structure using a pair of rolls by rolling a powder mixture comprising at least one catalyst or a catalyst mixture and a binder, and

   connecting the sheet-like structure to an electrically conductive catalyst support by rolling using said pair of rolls, wherein the clamping force of the rolls is maintained in a range from about 0.2 kN/cm to about 15 kN/cm.

2. A method for producing gas diffusion electrodes, suitable for use in electrolysis cells, comprising:

   producing a sheet-like structure using a pair of rolls by rolling a powder mixture comprising at least one catalyst or a catalyst mixture and a binder, and

   connecting the sheet-like structure to an electrically conductive catalyst support using said pair of rolls, wherein the diameter of the rolls, independently of one another, is not less than about 8 cm and not more than about 15 cm.

3. A method for producing gas diffusion electrodes, suitable for use in electrolysis cells, comprising:

   producing a sheet-like structure using a pair of rolls by rolling a powder mixture containing at least one catalyst or a catalyst mixture and a binder, and

   connecting the sheet-like structure to an electrically conductive catalyst support using said pair of rolls, the sheet-like structure is applied to the catalyst support by rolling, and further wherein the rolling is effected under a nip force of from about 0.1 kN/cm to about 2 kN/cm.

4. A method as claimed in claim 2, wherein the clamping force of the rolls during rolling of the powder mixture is in the range from about 0.2 kN/cm to about 10 kN/cm.

5. A method as claimed in claim 1, wherein the diameter of the rolls, independently of one another, is not less than about 8 cm and not more than about 13 cm.

6. A method as claimed in claim 1, wherein the circumferential speed of the rolls during rolling of the powder mixture, independently of one another, is from about 0.05 m/min to about 19 m/min.

7. A method as claimed in claim 1, wherein the circumferential speed of the rolls during connection of the sheet-like structure to the support, independently of one another, is from about 0.1 m/min to about 12 m/min.

8. A method as claimed in claim 1, wherein the sheet-like structure has a thickness of from about 0.05 mm to about 0.7 mm.

9. A method as claimed in claim 1, wherein the temperature of the sheet-like structure and/or of the catalyst support during the rolling processes is from about 5°C to about 70°C.

10. A method as claimed in claim 1, wherein the rolls, independently of one another, have a surface roughness of from about 0.05 μm to about 1.5 μm.

11. A method as claimed in claim 1, wherein the electrically conductive catalyst support is connected to a gas-permeable, metallic baseplate.

12. A method as claimed in claim 3, wherein the clamping force of the rolls during rolling of the powder mixture is in the range from about 0.2 kN/cm to about 10 kN/cm.

13. A method as claimed in claim 5, wherein the diameter of the rolls, independently of one another, is not less than about 8 cm and not more than about 13 cm.

14. A gas diffusion electrode produced according to claim 1.

15. A gas diffusion electrode produced according to claim 2.

16. A gas diffusion electrode produced according to claim 3.

17. A gas diffusion electrode having a voltage of less than 2.45 V at a current density of 4 kA/m^2, said electrode having been produced by rolling a dry powder.

18. An electrode of claim 17, wherein said rolling is conducted from under a nip force

from about 0.1 kN/cm to about 2 kN/cm.

19. An electrode of claim 17, wherein said electrode is capable of being produced from a sheet-like structure having a density variation from about ±2 to about ±5 g/m^3.

20. An electrode of claim 17, which is capable of being produced from a sheet-like structure having a thickness from about ±0.05 to about ±0.02 mm.